

PATENT ABSTRACTS OF JAPAN

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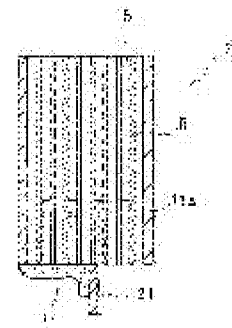
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(54) METHOD FOR MANUFACTURING HONEYCOMB STRUCTURE

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent the occurrence of a sink in the sealing parts of the cells of a honeycomb structure.

SOLUTION: In manufacturing the honeycomb structure, pressure is applied to the bottom surface of a storage container in such a state that the end surface of the honeycomb structure having a large number of axially piercing cells partitioned by partition walls is immersed in the slurry containing a ceramic powder in the storage container to introduce the slurry into at least a part of the cells under pressure and the honeycomb structure is separated from the storage container to seal at least a part of the cells. When the honeycomb structure is separated from the storage container, the slurry bonded to the end surface of the honeycomb structure is removed. Alternatively, air is blown against or heating is applied to the end surface part of the honeycomb structure separated from the storage container to dry the slurry.



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CLAIMS

[Claim(s)]

[Claim 1]

After pressing a slurry fit in at least some cells by pressurizing the end face of a honeycomb structured body which has a cell of a large number penetrated to shaft orientations divided by a septum to the bottom of a storage container in the state where it was immersed in a slurry having included a ceramic powder end in a storage container, It is a manufacturing method of a honeycomb structured body which seals at least some cells by seceding from the inside of a storage container from a honeycomb structured body,

A manufacturing method of a honeycomb structured body removing a slurry which has adhered to the end face of a honeycomb structured body in the case of secession of a honeycomb structured body in said storage container.

[Claim 2]

After pressing a slurry fit in at least some cells by pressurizing the end face of a honeycomb structured body which has a cell of a large number penetrated to shaft orientations divided by a septum to the bottom of a storage container in the state where it was immersed in a slurry having included a ceramic powder end in a storage container, It is a manufacturing method of a honeycomb structured body which seals at least some cells by seceding from the inside of a storage container from a honeycomb structured body,

A manufacturing method of a honeycomb structured body performing air blasting or heating to an end face section of a honeycomb structured body which seceded from the inside of said storage container, and drying a slurry.

[Claim 3]

After pressing a slurry fit in at least some cells by pressurizing the end face of a honeycomb structured body which has a cell of a large number penetrated to shaft orientations divided by a septum to the bottom of a storage container in the state where it was immersed in a slurry

having included a ceramic powder end in a storage container, It is a manufacturing method of a honeycomb structured body which seals at least some cells by seceding from the inside of a storage container from a honeycomb structured body,

A manufacturing method of a honeycomb structured body removing a slurry adhering to the end face of a honeycomb structured body, performing air blasting or heating after that to an end face section of a honeycomb structured body which seceded from the inside of a storage container, and drying a slurry in the case of secession of a honeycomb structured body in said storage container.

[Claim 4]

A manufacturing method of the honeycomb structured body according to claim 1 or 3 making a spatula slide relatively and removing a slurry to the end face of a honeycomb structured body.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]

This invention relates to the manufacturing method of a honeycomb structured body used for the filter for dust collection of DPF (diesel particulate filter) etc. which catch and remove the particulate contained in exhaust gas, such as a diesel power plant, for example.

[0002]

[Description of the Prior Art]

The honeycomb structured body 1 used for the above filters is constituted by covering the circumference with the coating material layer 4, after it is joined by more than one and the honeycomb segment 2 of the porosity which consists of silicon carbide etc. is fabricated by predetermined shape, such as a circular section, with the binder 9, as shown in drawing 8. By being arranged in the exhaust system of a diesel power plant as DPF, such a honeycomb structured body 1 is used in order to purify exhaust gas.

[0003]

As a honeycomb structured body as DPF, pressure loss is low and to be high collection efficiency is demanded. For this reason, in the honeycomb structured body 1, it has the structure where some cells of many cells were sealed.

[0004]

Drawing 9 shows the section of the honeycomb segment 2 which constitutes the honeycomb structured body 1, and has many cells 5 divided by the porous septum 6. The cell 5 has penetrated the honeycomb segment 2 to shaft orientations, and the end part in the cell 5 which adjoins is sealed by turns with the filler 7. That is, in the cell 5 of the honeycomb segment 2, while the left edge part is carrying out the opening, the right end section is sealed with the filler 7, and a left edge part is sealed with the filler 7 in other cells 5 which adjoin this, but the

opening of the right end section is carried out.

[0005]

In such a structure, the exhaust gas which flowed in the cell 5 in which the left edge part is carrying out the opening as an arrow shows passes the porous septum 6, and flows out of other cells 5. And since the particulate in exhaust gas is caught by the septum 6 when passing the septum 6, exhaust gas can be purified.

[0006]

Drawing 10 shows how to seal to the honeycomb segment 2 (the following, honeycomb structured body 1) (for example, refer to patent documents 1). As shown in drawing 10 (a), it fills up with the slurry 11 which the end of ceramic powder distributed to carrier fluid in the storage container 10. And the slurry 11 is pressed fit in some cells 5 by immersing the end face of one side of the honeycomb structured body 1 in the slurry 11 in the storage container 10, pressurizing the honeycomb structured body 1, and pressing the end face on the bottom of the storage container 10. The mask for blocking the adjoining cell 5 by turns is stuck on the end face of the honeycomb structured body 1.

The slurry 11 is pressed fit in the cell 5 of the portion in which the mask is carrying out the opening.

[0007]

After pressing the slurry 11 fit in the cell 5, as shown in the figure (b), the honeycomb structured body 1 is drawn out from the storage container 10, and the honeycomb structured body 1 is heated in a drying furnace, and it dries. Thereby, the slurry 11 pressed fit in the cell 5 serves as the filler 7 which seals the cell 5.

[0008]

[Patent documents 1]

JP,2002-126427,A

[0009]

[Problem(s) to be Solved by the Invention]

However, in the method mentioned above, it has a problem which a defect produces into the sealing portion of a cell. Drawing 11 explains this and (a) shows the state where the defect has not arisen. On the other hand, (b) shows the defect which HIKE (dent) 12 generated to the filler 7, and generates HIKE 12 toward the inside of the filler 7 from the end face of the honeycomb structured body 1.

[0010]

After the cause which such HIKE 12 generates forces the honeycomb structured body 1 on the bottom of the storage container 10, It is because the HIKE portion 13 is formed in the slurry pressed fit by the viscosity of the slurry in the cell 5 in addition to negative pressure acting in

the cell 5 when drawing out the honeycomb structured body 1 out of the slurry 11 (refer to drawing 10 (b)). When removing a mask from a honeycomb structured body, it is also the cause that a part of slurry in the cell 5 goes together, and it is removed with viscosity with the slurry besides the cell 5 adhering to a mask. It is also the cause that a slurry carries out drying shrinkage within a cell in the case of stoving of a slurry.

[0011]

Drawing 11 (c) shows the case where HIKE 12 occurs extremely, is crossing it to the overall length of the filler 7 in which HIKE 12 seals the cell 5, and is in the state where the hole opened to the filler 7 by this.

[0012]

In the case where such HIKE 12 occurs, the reliability of a sealing state of the cell 5 by the filler 7 falls, and it has a problem on which appearance deteriorates. When a hole opens to the filler 7 especially, in order that the particulate which should be caught may leak and come out, it stops functioning as a filter.

[0013]

In order to avoid the above thing, as shown in drawing 11 (d), it is necessary to press a slurry fit in the cell 5 so that the length as the filler 7 whole may become long, and to make sealing depth d deep. However, since the surface area of the septum 6 which functions as a filter decreases in this case, the problem to which collection efficiency falls occurs.

[0014]

This invention is made in consideration of such a problem, and is a thing.

It is that can prevent a hole from HIKE occurring into the portion which performs the purpose, or penetrating, and this provides the manufacturing method of the honeycomb structured body which made it unnecessary to be filled up with many slurries in a cell.

[0015]

[Means for Solving the Problem]

In order to attain the above-mentioned purpose, a manufacturing method of an invention of claim 1, After pressing a slurry fit in at least some cells by pressurizing the end face of a honeycomb structured body which has a cell of a large number penetrated to shaft orientations divided by a septum to the bottom of a storage container in the state where it was immersed in a slurry having included a ceramic powder end in a storage container, A slurry which is a manufacturing method of a honeycomb structured body which seals at least some cells, and has adhered to the end face of a honeycomb structured body in the case of secession of a honeycomb structured body in said storage container is removed by seceding from the inside of a storage container from a honeycomb structured body.

[0016]

In an invention of claim 1, after pressing a slurry fit in a cell of a honeycomb structured body, a slurry in a cell and a slurry besides a cell are compulsorily separable by removing a slurry which has adhered a honeycomb structured body to the end face of a honeycomb structured body when seceding from the inside of a storage container. It is lost that HIKE resulting from negative pressure or viscosity occurs by this.

[0017]

Since a slurry adhering to a mask is removed also when using a mask, also when removing a mask, a slurry in a cell cannot accompany to a slurry besides a cell, and generating of HIKE resulting from company can be prevented.

[0018]

By removing superfluous slurry layers which have adhered a honeycomb structured body to the end face of a honeycomb structured body after seceding from the inside of a storage container, the sealing part surface can be exposed into the atmosphere, it can be made to be able to dry compulsorily, and a slurry of the end face of a honeycomb structured body can be solidified. It is lost that HIKE generated by this when a slurry carries out drying shrinkage within a cell in the case of stoving of a slurry occurs.

[0019]

A manufacturing method of a honeycomb structured body of an invention of claim 2, After pressing a slurry fit in at least some cells by pressurizing the end face of a honeycomb structured body which has a cell of a large number penetrated to shaft orientations divided by a septum to the bottom of a storage container in the state where it was immersed in a slurry having included a ceramic powder end in a storage container, By seceding from the inside of a storage container from a honeycomb structured body, air blasting or heating is performed to an end face section of a honeycomb structured body which is a manufacturing method of a honeycomb structured body which seals at least some cells, and seceded from the inside of said storage container, and a slurry is dried.

[0020]

After pressing a slurry fit in a cell of a honeycomb structured body, a slurry of an end face section of a honeycomb structured body can be dried compulsorily, and it can be made to solidify by performing air blasting or heating to an end face section of a honeycomb structured body which seceded from the inside of a storage container according to the invention of claim 2. For this reason, HIKE at the time of desiccation can be prevented.

[0021]

A manufacturing method of a honeycomb structured body of an invention of claim 3, After pressing a slurry fit in at least some cells by pressurizing the end face of a honeycomb structured body which has a cell of a large number penetrated to shaft orientations divided by a septum to the bottom of a storage container in the state where it was immersed in a slurry

having included a ceramic powder end in a storage container, It is a manufacturing method of a honeycomb structured body which seals at least some cells by seceding from the inside of a storage container from a honeycomb structured body, In the case of secession of a honeycomb structured body in said storage container, a slurry adhering to the end face of a honeycomb structured body is removed, air blasting or heating is performed after that to an end face section of a honeycomb structured body which seceded from the inside of a storage container, and a slurry is dried.

[0022]

By removing a slurry which has adhered a honeycomb structured body to the end face of a honeycomb structured body like an invention of claim 1 in an invention of claim 3 when seceding from the inside of a storage container, In order to separate a slurry in a cell, and a slurry besides a cell compulsorily, it is lost that HIKE resulting from negative pressure or viscosity occurs. Since a slurry adhering to a mask is removed also when using a mask, when removing a mask, a slurry in a cell cannot accompany to a slurry besides a cell, and generating of HIKE resulting from company can be prevented.

[0023]

By performing air blasting or heating to an end face section of a honeycomb structured body which seceded from the inside of a storage container like an invention of claim 2, it can dry compulsorily and a slurry of an end face section in a cell can be solidified for a short time. Thereby, HIKE at the time of desiccation can be prevented.

[0024]

According to the invention of claim 3, generating of HIKE to a filler in a cell can be certainly prevented by these.

[0025]

An invention of claim 4 is a manufacturing method of the honeycomb structured body according to claim 1 or 3, to the end face of a honeycomb structured body, makes a spatula slide relatively and removes a slurry.

[0026]

Thus, by making a spatula slide relatively, a slurry is simply and certainly removable from the end face of a honeycomb structured body.

[0027]

[Embodiment of the Invention]

Hereafter, an embodiment explains this invention concretely. The same numerals are made to have given and corresponded to the same member of the figure mentioned above in each figure.

[0028]

Manufacture of the honeycomb structured body in this embodiment, After pressing a slurry fit

in at least some cells by pressurizing the end face of the honeycomb structured body which has a cell of a large number penetrated to the shaft orientations divided by the septum to the bottom of a storage container in the state where it was immersed in the slurry having included the ceramic powder end in a storage container, At least some cells are sealed by seceding from the inside of a storage container from a honeycomb structured body.

[0029]

As a raw material of a honeycomb structured body, silicon carbide, silicon nitride, cordierite, At least a kind of ceramics, Fe-Cr-aluminum system metal, nickel series metal, or metal Si and SiC chosen from the group which consists of alumina, mullite, zirconia, phosphoric acid zirconium, aluminum titanate, titanias, or such combination is used.

[0030]

And binders, such as methyl cellulose and hydroxypropoxyl methyl cellulose, a surface-active agent, water, etc. are added to these, and a reversible plastic matter is produced. By carrying out extrusion molding of this plastic matter, honeycomb segments, such as square pillar shape etc. of shape with the cell 5 of a large number penetrated to the shaft orientations divided by the septum 6, are fabricated. This honeycomb segment serves as a honeycomb structured body of this embodiment, and after desiccation, a sealing process is presented, after calcinating and hardening.

[0031]

When sealing to some cells of a honeycomb structured body, a mask is stuck on the end face of a honeycomb structured body in advance of sealing. A mask is stuck on the whole end face of a honeycomb structured body, and drilling is performed into the portion corresponding to the cell which should be sealed after that. This drilling is performed by irradiating with a laser beam to the portion corresponding to the cell which should be sealed. Resin, such as polyethylene and polyester, can be used as a mask.

[0032]

In sealing, a slurry is pressed fit in some cells by being filled up with a slurry having included the end of ceramic powder in a storage container, immersing the end face of a honeycomb structured body in a slurry, and pressurizing the end face of a honeycomb structured body to the bottom of a storage container.

[0033]

A slurry is adjusted by mixing the end of ceramic powder to carrier fluid, such as water, and can add a binding material, a deflocculant, etc. suitably. As the end of ceramic powder, the raw material used for cordierite and the other honeycomb structured bodies mentioned above can be chosen suitably. It is preferred to use polyvinyl alcohol and resin with the characteristic gelled with other heating as a binding material. In order to restrain the end of ceramic powder in the case of gelling in the case of resin with the characteristic gelled with heating, it becomes

effective in prevention of HIKE. Methyl cellulose etc. can be chosen as this resin.

[0034]

a slurry -- the viscosity of about 5-50 Pa-s -- it is more preferably adjusted and used for the viscosity of the range of 10 - 20 Pa-s. When becoming easy to generate HIKE when the viscosity of a slurry is less than 5 Pa-s, and exceeding 50 Pa-s, since flow resistance becomes large, the amount of press fits into a cell decreases and the sealing depth becomes shallow, it is not desirable.

[0035]

A slurry is pressed fit in a cell from the opening part of a mask by pressurizing the end face of a honeycomb structured body to the bottom of a storage container, where the end face of a honeycomb structured body is immersed in such a slurry. Application of pressure can be preferably performed by making the pressure of about 0.1-0.2 MPa act 0.05 to 0.5 MPa. In this case, it is preferred that the end face of a honeycomb structured body is immersed so that it may intersect perpendicularly to the wall surface of a slurry.

[0036]

When pressing a slurry fit in a cell, the end face of a honeycomb structured body may be pressed fit in one side [every] turn, and a both-ends side may be pressed fit simultaneously.

[0037]

Drawing 1 shows the honeycomb structured body 1 in the state where the slurry was pressed fit, and the slurry 11a used as the filler 7 is pressed fit in the cell 5 from which the mask (graphic display abbreviation) was removed. According to this embodiment, after press fit of the slurry 11a, although it secedes from the honeycomb structured body 1 by a storage container to drawing etc., when breaking away, the slurry 11 adhering to the end face of the honeycomb structured body 1 is removed. This removal can be performed by making the honeycomb structured body 1 and the spatula 21 slide relatively, contacting the spatula 21 and maintaining a contact state to the end face by the side of press fit of the slurry 11 in the honeycomb structured body 1.

[0038]

Thus, since the slurry 11a in the cell 5 and the slurry 11 besides a cell are compulsorily separable by removing the slurry 11 from the end face of the honeycomb structured body 1, it is lost that HIKE resulting from negative pressure or viscosity occurs. Since the slurry 11a in the cell 5 does not accompany to the slurry 11 which exists in the outside of the cell 5 also when removing a mask, generating of HIKE resulting from company can be prevented.

[0039]

By removing the slurry 11 from the end face of the honeycomb structured body 1, the surface of the slurry 11a in the cell 5 can be exposed into the atmosphere, it can be made to be able to dry compulsorily in a short time, and the surface of the slurry 11a in the cell 5 can be solidified.

Thereby, when the slurry 11a in the cell 5 carries out drying shrinkage within a cell in the case of stoving of a slurry, HIKE generated on the surface of the slurry 11a is lost.

[0040]

After pressing the slurry 11a fit in the cell 5 of the honeycomb structured body 1 as mentioned above in another embodiment of this invention, Air blasting or heating is performed to the end face section of the honeycomb structured body with which it secedes from the inside of a storage container, and the slurry 11a is filled up after that in the honeycomb structured body 1, and the slurry 11a is dried.

[0041]

Drawing 2 shows this another embodiment and shows the state where air blasting 23 is performed to the end face by the side of restoration of the slurry 11a in the honeycomb structured body 1. The air blasting 23 may be any of cold blast and warm air. In the case of cold blast, it can dry by in the case of about 25 ** air and warm air, blowing about 60 ** air on the end face of the honeycomb structured body 1, and applying it. As such air capacity, it carries out in about 8-10 mm/[sec and], and ends by blowing around 30 seconds and performing reliance.

[0042]

It is also possible to contact a heat source directly and to carry out stoving to the end face of the honeycomb structured body 1, without ventilating. In this case, it can carry out by making an about 140 ** heat source contact about 30 seconds.

[0043]

With the above air blasting or heating, the surface of the slurry 11a in the cell 5 can be dried compulsorily in a short time, and the surface of the slurry 11a in the cell 5 can be solidified. Thereby, when the slurry 11a in the cell 5 carries out drying shrinkage within a cell in the case of stoving of a slurry, HIKE generated on the surface of the slurry 11a is lost.

[0044]

In another embodiment of this invention, when making the honeycomb structured body 1 secede from the slurry 11, remove the slurry 11 adhering to the end face of the honeycomb structured body 1, and. It is also possible to perform air blasting or heating to the end face section of the honeycomb structured body with which the slurry 11a is filled up in the honeycomb structured body 1 after seceding from the slurry 11, and to dry the slurry 11a.

[0045]

Thus, it becomes possible by using together compulsory removal of the slurry from the end face of the honeycomb structured body 1, and the air blasting to the end face section of the honeycomb structured body 1 or heating to prevent generating of HIKE still more certainly.

[0046]

As are shown in drawing 7 (a) instead of what is limited for the shape of the cell 5 in the

honeycomb structured body 1, it is shown in a quadrangle cell and the figure (b) and it is shown in a hexagon cell and the figure (c), it can be considered as the shape of a triangle cell and others.

[0047]

[Example]

Drawing 3 - drawing 6 show the storage container 31 used for the example of this invention, respectively. In these figures, the sliding member 32 slid in the direction which intersects perpendicularly with the end face of the honeycomb structured body 1 is formed in the bottom of the storage container 31. The sliding member 32 constitutes the portion of the storage container 31.

The upper surface is filled up with the slurry 11.

[0048]

The spatula 33 is attached to the end by the side of one of the sliding member 32 in the shape of a standup. As the spatula 33, 0.1-2.0-mm-thick rubber, elasticity resin, etc. can be used. The upper bed part has risen so that it may become a height of 0.1-2.0 mm from the upper surface of the sliding member 32. By making the sliding member 32 slide, the spatula 33 moves contacting the end face of the honeycomb structured body 1, and it acts so that this movement may remove the slurry 11 adhering to the outside of the end face of the honeycomb structured body 1. In this example, using 0.5-mm-thick resin, the spatula 33 is installed so that it may become a height of 0.5 mm from the upper surface of the sliding member 32.

[0049]

the method of showing hereafter the method shown in drawing 3 in the A' method and drawing 4 -- B' -- a method and the method shown in drawing 5 -- C' -- a method and the method shown in drawing 6 -- D' -- it explains as a method.

[0050]

In the A' method, as drawing 3 (a) shows, it contacts from the upper part of the sliding member 32 and an arrow shows the honeycomb structured body 1, the end face is pressurized to the sliding member 32 by pressing the honeycomb structured body 1. By this application of pressure, the slurry 11 is pressed fit in the cell 5 of the honeycomb structured body 1. Then, it meets horizontally and the sliding member 32 is made to slide, as drawing 3 (b) shows. The slurry 11 adhering to the outside of the end face of the honeycomb structured body 1 is scratched, and this slide removes it.

In the B' method, as drawing 4 (a) shows, it contacts from the upper part of the honeycomb structured body 1 and an arrow shows the sliding member 32, the end face of the honeycomb structured body 1 is pressurized to the sliding member 32 by pressing the sliding member 32. By this application of pressure, the slurry 11 is pressed fit in the cell 5 of the honeycomb

structured body 1. Then, it meets horizontally and the sliding member 32 is made to slide, as drawing 4 (b) shows. The slurry 11 adhering to the outside of the end face of the honeycomb structured body 1 is scratched, and this slide removes it.

[0051]

In the C' method, as drawing 5 (a) shows, the honeycomb structured body 1 is contacted from the direction of width (right) of the sliding member 32, and the end face is pressed to the sliding member 32. By this press, the slurry 11 is pressed fit in the cell 5 of the honeycomb structured body 1. Then, the sliding member 32 is made to slide along a sliding direction, as drawing 5 (b) shows. The slurry 11 adhering to the outside of the end face of the honeycomb structured body 1 is scratched, and this slide removes it.

[0052]

In the D' method, as drawing 6 (a) shows, the sliding member 32 is contacted from the direction of width (left) of the honeycomb structured body 1, and the end face is pressed to the sliding member 32. By this press, the slurry 11 is pressed fit in the cell 5 of the honeycomb structured body 1. Then, the sliding member 32 is made to slide along a sliding direction, as drawing 6 (b) shows. The slurry 11 adhering to the outside of the end face of the honeycomb structured body 1 is scratched, and this slide removes it.

[0053]

Next, in this example, manufacture and its evaluation of the honeycomb structured body 1 were performed as follows.

[0054]

The honeycomb structured body (one side of squares of 35 mm, length: contour shape: square pole form, the bottom : 150 mm, cell shape : quadrangle) which consists of cordierite which has two or more cells used as the channel of a fluid was used. This honeycomb structured body carried out extrusion molding of the plastic matter adjusted to suitable viscosity using the cap which has the above-mentioned cell shape, septum thickness, and cell density, and manufactured it by cutting a both-ends side and considering it as a smooth side after desiccation.

[0055]

In the end face, the above-mentioned honeycomb structured body carried out the mask of some cells, in order to seal the adjoining cell by turns (namely, in checkers sealing). As the method of a mask, after sticking on the whole end face of a honeycomb structured body an adhesive film (thing of marketing to which it is a product made of resin and the binder was applied on the surface of one side), only the portion equivalent to the cell which needs a sealing part was performed by the method of making a hole with laser.

[0056]

Next, by immersing the end face of the honeycomb structured body which carried out the mask

into the storage container in which the slurry was stored, and pressing to the inner bottom of a storage container, the slurry was made to press fit in the cell which has not carried out the mask of two or more cells, and the sealing part was formed. under the present circumstances, to the storage container, the slurry was stretched so that an oil level might become smooth, and where the end face which carried out the mask of the honeycomb structured body is turned to the bottom of a storage container (namely, -- setting vertically to an oil level), the end face which carried out the mask of the honeycomb structured body was immersed into the slurry by pushing in.

[0057]

As a slurry, as the methyl cellulose which is a binding material of heat gel hardenability as a binding material and the deflocculant which are cordierite powder as the end of ceramic powder, the polymer surfactant was mixed and what was prepared by adding water and mixing was used as carrier fluid.

[0058]

Evaluation manufactures each 50 sealed honeycomb structured bodies, and the number of cells which HIKE of each honeycomb structured body generated visually is checked, According to the following formula, HIKE occurrence frequency was computed about each honeycomb structured body, the average value of the HIKE occurrence frequency of 50 honeycomb structured bodies was computed, and the average value was evaluated as HIKE occurrence frequency. The total number of sealing cells is 1/2 of the total number of cells. This is because it is sealing in checkers by turns.

[0059]

HIKE occurrence frequency (%) =(number of HIKE generating cells / total number of sealing cells) x100

In the slurry press fit method of of the "A'method", "B' method" and the "C'method", "D' method" mentioned above, After pressing a honeycomb structured body to the inner bottom of a storage container, the excessive slurry which slid the spatula attached to the base part of a storage container, and adhered to the end of the honeycomb structured body was removed, and the honeycomb structured body was taken out.

[0060]

On the other hand, in the slurry press fit method "A method", the "B method", the "C method", and the "D method", after pressing a honeycomb structured body to the inner bottom of a storage container, the honeycomb structured body was pulled up as it was, and was taken out.

[0061]

In these slurry press fit methods, the "A method" and the "A' method", From the honeycomb structured body side, arrange a honeycomb structured body to the up side, arrange a storage

container to the down side, pressurize, and the "B method" and the "B' method", Arrange a honeycomb structured body to the down side, arrange a storage container to the up side, and it pressurizes from the storage container side, the "C method" and the "C' method" arrange a honeycomb structured body and a storage container in a transverse direction, and pressurize them from the honeycomb structured body side -- "the D method" -- and -- "-- D' -- method" has arranged the honeycomb structured body and the storage container in the transverse direction, and pressurized them from the storage container side.

[0062]

Immediately after [taking out after pressing a honeycomb structured body to the inner bottom of a storage container about the drying method of a slurry], Put in a honeycomb structured body in a hot air drying furnace, and it dries by 90 °C and 40min ("the a method"), After applying 25 °C and 8-10 mm/sec cold blast to the end of a honeycomb structured body 30 sec, Put in a honeycomb structured body in a hot air drying furnace, and it dries by 90 °C and 40min ("the b method"), After applying 60 °C and 8-10 mm/sec warm air to the end of a honeycomb structured body 30 sec, After having put in the honeycomb structured body in the hot air drying furnace, drying by 90 °C and 40min ("the c method") and making the end of a honeycomb structured body touch a 140 °C heat source directly 30 sec, the honeycomb structured body was put in in the hot air drying furnace, and 90 °C carried out 40min desiccation ("the d method").

[0063]

Table 1 shows the HIKE occurrence frequency to the slurry press fit method, Table 2 shows the HIKE occurrence frequency to a slurry drying method, and Table 3 shows the HIKE occurrence frequency to the case where the slurry press fit method and a slurry drying method are combined. Table 4 shows the HIKE occurrence frequency to *****.

[0064]

[Table 1]

【表 1】スラリー圧入方法とヒケ発生頻度

	隔壁厚さ (μm)	セル密度 (個/ cm^2)	総セル数 (個)	スラリー 圧入方法	スラリ ー 乾燥方 法	ヒケ発生頻 度 (%)
比較例 1	15	200	380	A法	a法	35.6
比較例 2	15	200	380	B法	a法	42.1
比較例 3	15	200	380	C法	a法	38.0
比較例 4	15	200	380	D法	a法	49.7
実施例 1	15	200	380	A'法	a法	3.2
実施例 2	15	200	380	B'法	a法	4.1
実施例 3	15	200	380	C'法	a法	2.7
実施例 4	15	200	380	D'法	a法	3.4

[Table 2]

【表 2】スラリー乾燥方法とヒケ発生頻度

	隔壁厚さ (μm)	セル密度 (個/ cm^2)	総セル数 (個)	スラリー 圧入方法	スラリ ー 乾燥方 法	ヒケ発生頻 度 (%)
比較例 5	15	200	380	A法	a法	35.6
実施例 5	15	200	475	A法	b法	4.2
実施例 6	15	200	570	A法	c法	5.0
実施例 7	15	200	380	A法	d法	3.6

[Table 3]

【表 3】スラリー圧入と乾燥方法を組み合わせた場合のヒケ発生頻度

	隔壁厚 さ (μ m)	セル密度 (個/ cm^2)	総セル数 (個)	スラリー 圧入方法	スラリ ー 乾燥方 法	ヒケ発生頻 度 (%)
比較例 6	15	200	380	A 法	a 法	35.6
比較例 7	15	200	570	A' 法	a 法	3.2
比較例 8	15	200	380	A 法	b 法	4.1
実施例 8	15	200	630	A' 法	b 法	0.3
実施例 9	15	200	570	A' 法	c 法	0.2
実施例 10	15	200	630	B' 法	c 法	0.8

[Table 4]

【表 4】セル密度とヒケ発生頻度

	隔壁厚 さ (μ m)	セル密度 (個/ cm^2)	総セル数 (個)	スラリー 圧入方法	スラリ ー 乾燥方 法	ヒケ発生頻 度 (%)
比較例 9	15	200	380	A 法	a 法	35.6
比較例 10	15	250	475	B 法	a 法	39.7
比較例 11	12	300	570	C 法	a 法	32.0
実施例 11	15	200	380	A' 法	b 法	0.7
実施例 12	15	250	475	A' 法	b 法	0.5
実施例 13	11	270	515	A' 法	b 法	0.2
実施例 14	12	300	570	A' 法	b 法	0.2
実施例 15	13	330	630	A' 法	b 法	0.1

Above about a slurry drying method, from an example and a comparative example. Time after pressing a honeycomb structured body to the inner bottom of a storage container until it begins to dry an end in cold blast, warm air, or a heat source 0 to 30 sec, The temperature of a heat source understands that sec is good in 5-20 mm /as for the wind speed of 50-200 **, cold blast, or warm air 10 sec or more for the time dried in cold blast, warm air, or a heat source.

[0065]

About the spatula for removing a slurry, 0.1-2.0 mm in height from the storing section bottom and construction material are good, when a plastic or rubber, and thickness are 0.1-2.0 mm.

[0066]

[Effect of the Invention]

According to the invention of claim 1, in order to separate the slurry in a cell, and the slurry besides a cell compulsorily, HIKE resulting from negative pressure or viscosity does not occur,

and. Since the slurry in a cell does not accompany to the slurry besides a cell when removing a mask also when using a mask, generating of HIKE resulting from company can be prevented.

[0067]

According to the invention of claim 2, since the slurry in a cell is dried compulsorily for a short time, it can dry compulsorily and the slurry of the end face section in a cell can be solidified for a short time. Thereby, HIKE at the time of desiccation can be prevented.

[0068]

According to the invention of claim 3, in order to separate the slurry in a cell, and the slurry besides a cell compulsorily, HIKE resulting from negative pressure or viscosity does not occur, and. When removing a mask, the slurry in a cell cannot accompany to the slurry besides a cell, can prevent generating of HIKE resulting from company, and further, Since the slurry in a cell is dried compulsorily for a short time, it can dry compulsorily and the slurry of the end face section in a cell can be solidified for a short time. Thereby, HIKE at the time of desiccation can be prevented. Therefore, generating of HIKE can be prevented certainly.

[0069]

According to the invention of claim 4, in addition to the effect of claims 1 and 3, a slurry is simply and certainly removable from the end face of a honeycomb structured body.

[Brief Description of the Drawings]

[Drawing 1] It is a sectional view showing the state of removing a slurry from the end face of a honeycomb structured body.

[Drawing 2] It is a sectional view showing the state where it is ventilating to the end face of a honeycomb structured body.

[Drawing 3] (a) and (b) are the sectional views showing the A' method for removing a slurry from the end face of a honeycomb structured body.

[Drawing 4] (a) and (b) are the sectional views showing the B' method for removing a slurry from the end face of a honeycomb structured body.

[Drawing 5] (a) and (b) are the sectional views showing the C' method for removing a slurry from the end face of a honeycomb structured body.

[Drawing 6] (a) and (b) are the sectional views showing the D' method for removing a slurry from the end face of a honeycomb structured body.

[Drawing 7] (a) - (c) is an end elevation showing the shape of a cell.

[Drawing 8] It is a perspective view showing an example of a honeycomb structured body.

[Drawing 9] It is a sectional view of the honeycomb segment which constitutes a honeycomb structured body.

[Drawing 10] (a) and (b) are the sectional views of the conventional method of filling up a honeycomb structured body with a slurry.

[Drawing 11](a) - (d) is a sectional view showing HIKE.

[Description of Notations]

1 Honeycomb structured body

5 Cell

6 Septum

11 Slurry

11a The slurry besides a cell

21, 33 spatulas

23 Air blasting

[Translation done.]

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- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is a sectional view showing the state of removing a slurry from the end face of a honeycomb structured body.

[Drawing 2]It is a sectional view showing the state where it is ventilating to the end face of a honeycomb structured body.

[Drawing 3](a) and (b) are the sectional views showing the A' method for removing a slurry from the end face of a honeycomb structured body.

[Drawing 4](a) and (b) are the sectional views showing the B' method for removing a slurry from the end face of a honeycomb structured body.

[Drawing 5](a) and (b) are the sectional views showing the C' method for removing a slurry from the end face of a honeycomb structured body.

[Drawing 6](a) and (b) are the sectional views showing the D' method for removing a slurry from the end face of a honeycomb structured body.

[Drawing 7](a) - (c) is an end elevation showing the shape of a cell.

[Drawing 8]It is a perspective view showing an example of a honeycomb structured body.

[Drawing 9]It is a sectional view of the honeycomb segment which constitutes a honeycomb structured body.

[Drawing 10](a) and (b) are the sectional views of the conventional method of filling up a honeycomb structured body with a slurry.

[Drawing 11](a) - (d) is a sectional view showing HIKE.

[Description of Notations]

1 Honeycomb structured body

5 Cell

6 Septum

11 Slurry

11a The slurry besides a cell

21, 33 spatulas

23 Air blasting

[Translation done.]

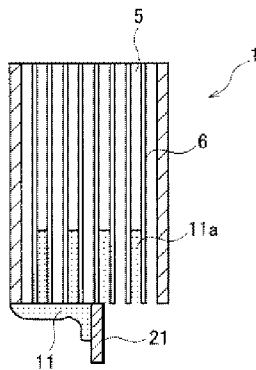
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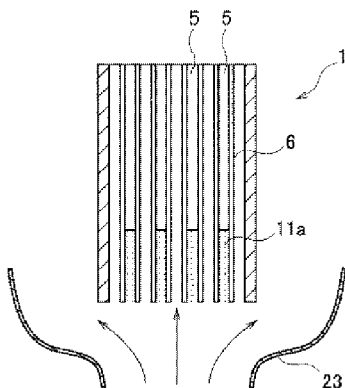
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DRAWINGS

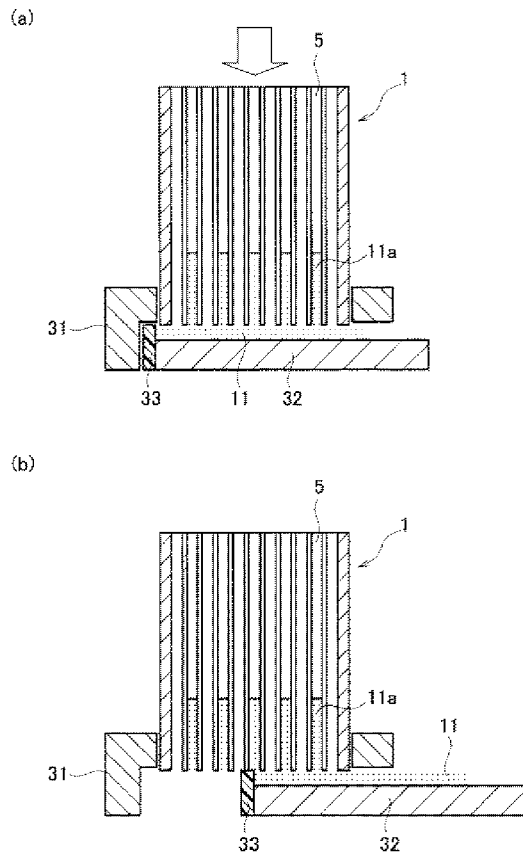
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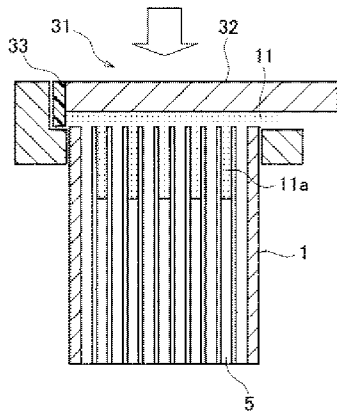


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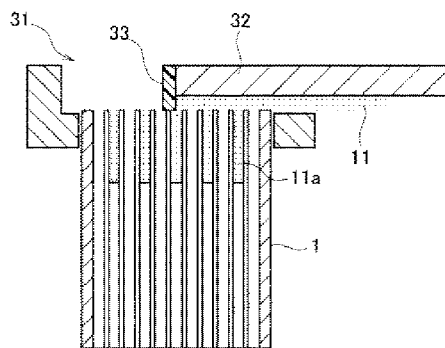


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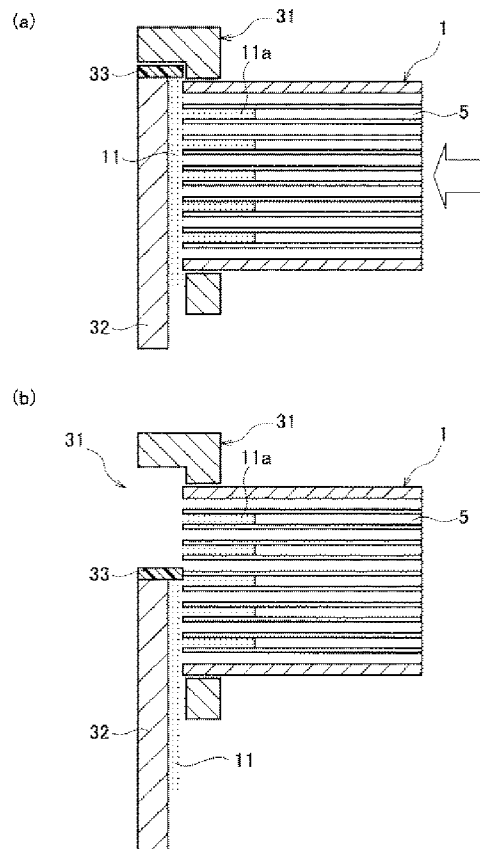
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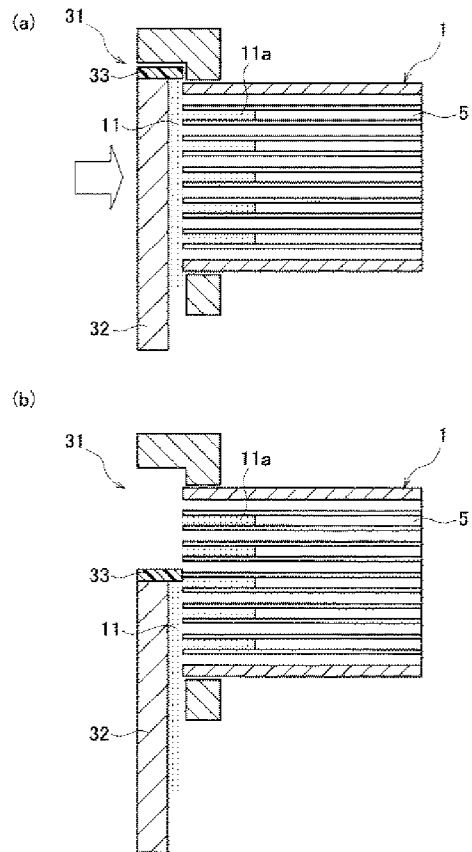
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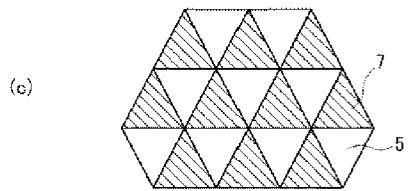
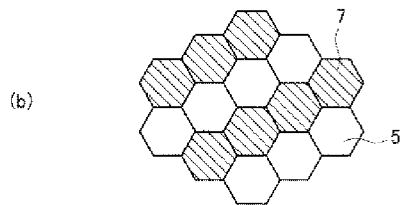
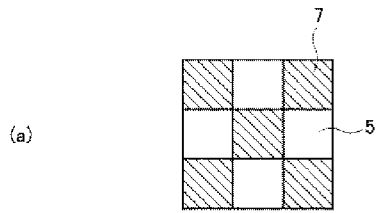
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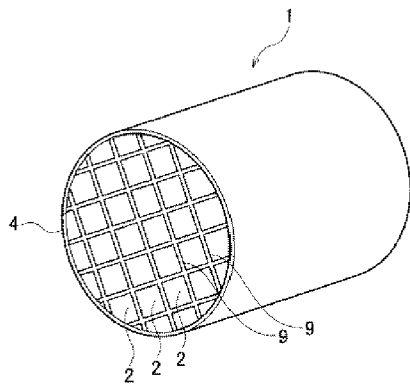
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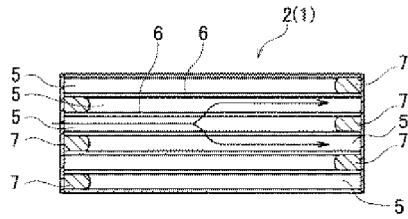
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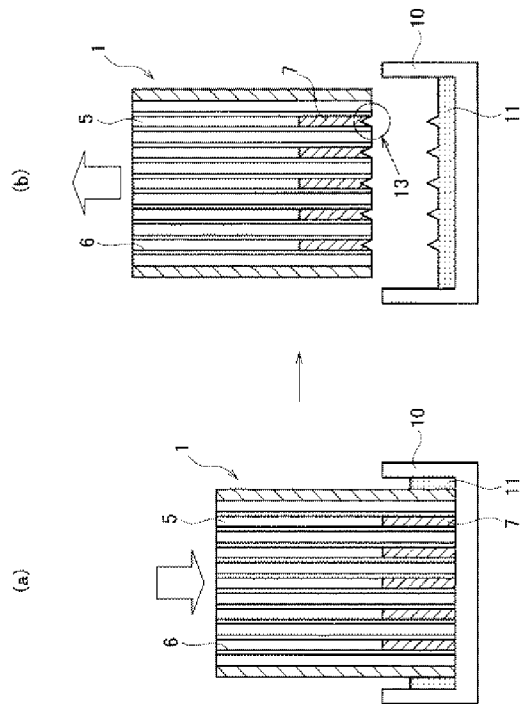
[Drawing 8]



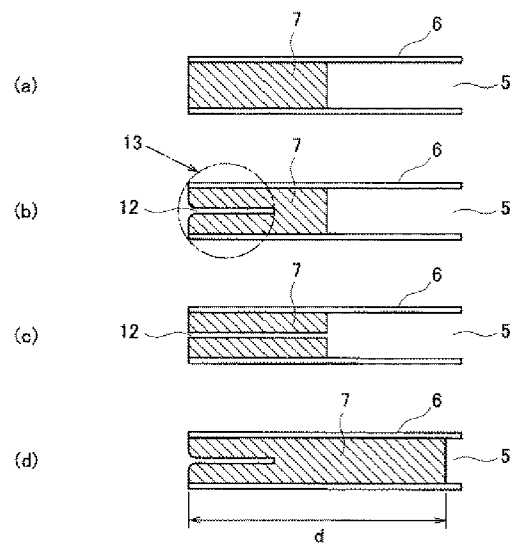
[Drawing 9]



[Drawing 10]



[Drawing 11]



[Translation done.]